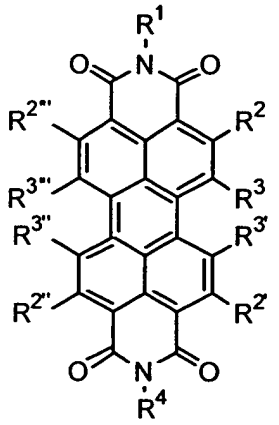
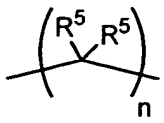
What is claimed is:

1. A method of reducing proliferative capacity of a cell comprising contacting said cell with a compound or a salt thereof or a stereoisomer of compound I that has the formula:

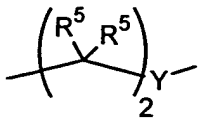


I

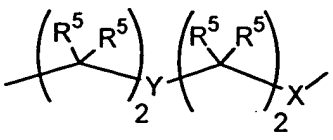
where R^1 and R^4 are independently -L-A where L is a linking group having the formula:



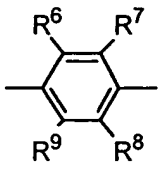
where n is 1-3; and each R5 is independently H, Me, OH, or OMe;



where R5 is as before and Y is O, S, SO, SO2, NH, NMe, or NCOMe;

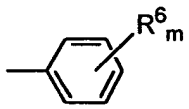


where R5 and Y are as before and X is CH_2, O, S, SO, SO_2, NH, NMe, or NCOMe;

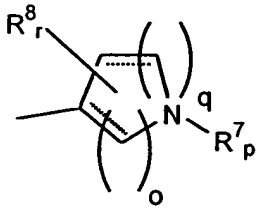


where R^6, R^7, R^8, and R^9 are independently H, OMe, OEt, halogen, or Me;

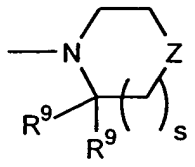
and A is a compound of the formula:



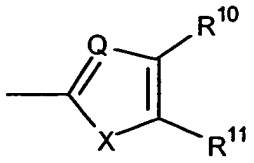
where m is 0-5 and R6 is halogen, NH_2, NO_2, CN, OMe, SO_2NH_2, amidino, guanidino, or Me;



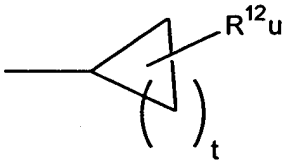
where o is 0-1; p is 0-2; q is 1-2 provided that when o + q is 2, in which case a pyrrolidine or pyrrole ring is indicated, or 3, in which a piperidine or pyridine ring is indicated; r is 0-3; R^7 is H or Me; R^8 is independently Me, NO_2, OH, CH_2OH or halogen, and when r is 2-3, two adjacent R8 substituents are -(CH=CH)2- or -(CH2)4- to form an annulated six-membered ring;



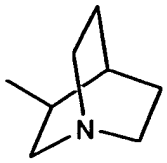
where R^9 is independently H, Me, and when R9 is O; s is 0-1; Z is CH_2, O, NH, NMe, NEt, $N(Me)_2$, $N(Et)_2$, or NCO_2Et;



where Q is N, CH, NMe, or NEt; X is O, S, NH, NMe or NEt; R^{10} and R^{11} are independently H, Me, CH_2CO_2Et, R^{10} and R^{11} taken together are $-(CH=CH)_2-$ or $-(CH_2)_4-$;



where t is 1-4 4; u is 0-4, and R12 is independently Me, OH,



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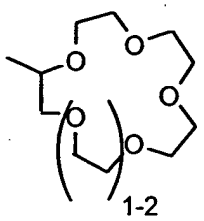


;

CO_2R^{13}, $CON(R^{13})_2$, SO_3H, $SO_2N(R^{13})_2$, CN, $CH(CO_2R^{13})_2$, $CH(CON(R^{13})_2)_2$, $N(R^{13})_2$, or $N(R^{13})_3$ where R^{13} is H, Me, Et, or CH_2CH_2OH; and

R^2, $R^{2'}$, $R^{2''}$, $R^{2'''}$; R^3, $R^{3'}$, $R^{3''}$, $R^{3'''}$ are each independently H, OMe, halogen, or NO_2.

2. The method of claim 1, wherein the cell is a mammalian cell.

3. The method of claim 1, wherein the cell is a human cell.

4. The method of claim 1, wherein the cell is a cancer cell.

5. The method of claim 1, wherein said malignant cell is a breast cancer cell, a prostate cancer cell, liver cancer cell, a pancreatic cancer cell, a lung cancer cell, a brain cancer cell, an ovarian cancer cell, a uterine cancer cell, a testicular cancer cell, a skin cancer cell, a leukemia cell, a head and neck cancer cell, an esophageal cancer cell, a stomach cancer cell, a colon cancer cell, a retinal cancer cell, a bladder cancer cell, an anal cancer cell and a rectal cancer cell.

6. A method of reducing telomeric extension comprising administering a compound of claim 1 to a telomerase in the presence of a telomerase substrate.

7. The method of claim 6, where the telomerase is in a cell.

8. The method of claim 1, wherein said compound further promotes apoptosis.

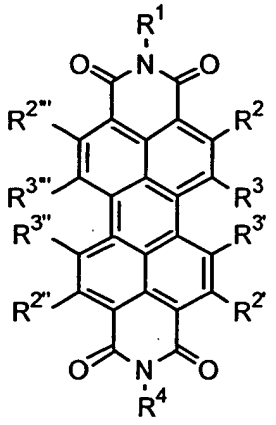
9. The method of claim 1, wherein said compound further promotes apoptosis in a cell.

10. The method of claim 1, wherein the compound is a perylene compound.

11. The method of claim 1, wherein the compound is N,N'-bis(2-piperdinoethyl)-3,4,9,10-perylenetetracarboxylic acid diimide.

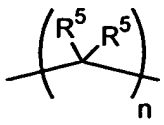
12. The method of claim 1, wherein the compound is N,N'-bis(2-dimethylaminoethyl)-3,4,9,10-perylenetetracarboxylic acid diimide.

13. A compound of the formula

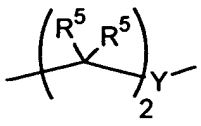


I

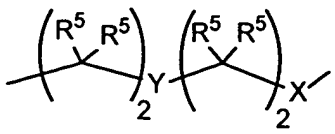
where R^1 and R^4 are independently -L-A where L is a linking group having the formula:



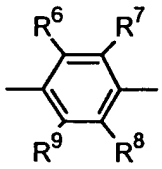
where n is 1-3; and each R5 is independently H, Me, OH, or OMe;



where R5 is as before and Y is O, S, SO, SO2, NH, NMe, or NCOMe;

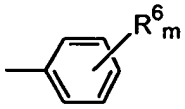


where R5 and Y are as before and X is CH_2, O, S, SO, SO_2, NH, NMe, or NCOMe;

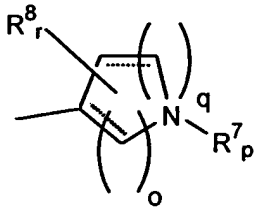


where R^6, R^7, R^8, and R^9 are independently H, OMe, OEt, halogen, or Me;

and A is a compound of the formula:

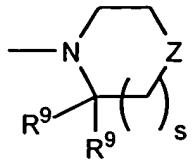


where m is 0-5 and R6 is halogen, NH_2, NO_2, CN, OMe, SO_2NH_2, amidino, guanidino, or Me;

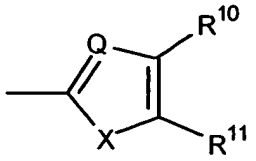


where o is 0-1; p is 0-2; q is 1-2 provided that when o + q is 2, in which case a pyrrolidine or pyrrole ring is indicated, or 3, in which a piperidine or pyridine ring

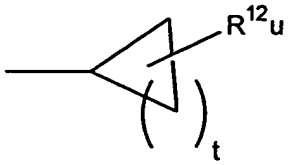
is indicated; r is 0-3; R^7 is H or Me; R^8 is independently Me, NO_2, OH, CH_2OH or halogen, and when r is 2-3, two adjacent R8 substituents are -(CH=CH)2- or -(CH2)4- to form an annulated six-membered ring;



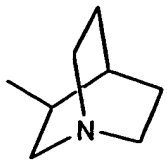
where R^9 is independently H, Me, and when R9 is O; s is 0-1; Z is CH_2, O, NH, NMe, NEt, $N(Me)_2$, $N(Et)_2$, or NCO_2Et;



where Q is N, CH, NMe, or NEt; X is O, S, NH, NMe or NEt; R^{10} and R^{11} are independently H, Me, CH_2CO_2Et, R^{10} and R^{11} taken together are $-(CH=CH)_2-$ or $-(CH_2)_4-$;



where t is 1-4 4; u is 0-4, and R12 is independently Me, OH,



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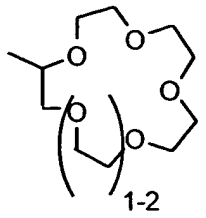

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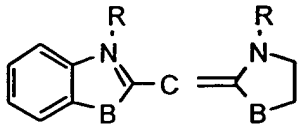
CO_2R^{13}, $CON(R^{13})_2$, SO_3H, $SO_2N(R^{13})_2$, CN, $CH(CO_2R^{13})_2$, $CH(CON(R^{13})_2)_2$, $N(R^{13})_2$, or $N(R^{13})_3$ where R^{13} is H, Me, Et, or CH_2CH_2OH; and

R^2, $R^{2'}$, $R^{2''}$, $R^{2'''}$; R^3, $R^{3'}$, $R^{3''}$, $R^{3'''}$ are each independently H, OMe, halogen, or NO_2.

14. A method of reducing proliferative capacity of a cell comprising contacting said cell with a compound having the formula II or a salt thereof or a stereoisomer of said compound:



II

where C is -CH=CH-, $-(CH=CH)_2-$, $-(CH=CH)_3-$, p-phenylene, o-phenylene, p-phenylene-CH=CH-, or o-phenylene-CH=CH-; B is O, S, or NR, and R is r Me or Et.

15. The method of claim 14, wherein the cell is a mammalian cell.

16. The method of claim 14, wherein the cell is a human cell.

17. The method of claim 14, wherein the cell is a cancer cell.

18. The method of claim 14, wherein said cancer cell is a breast cancer cell, a prostate cancer cell, liver cancer cell, a pancreatic cancer cell, a lung cancer cell, a brain cancer cell, an ovarian cancer cell, a uterine cancer cell, a testicular cancer cell, a skin cancer cell, a leukemia cell, a head and neck cancer cell, an esophageal cancer cell, a

stomach cancer cell, a colon cancer cell, a retinal cancer cell, a bladder cancer cell, an anal cancer cell and a rectal cancer cell.

19. A method of reducing telomeric extension comprising administering a compound of claim 14, to a telomerase in the presence of a telomerase substrate.

20. The method of claim 19, where telomerase is in a cell.

21. The method of claim 14, wherein said compound further promotes apoptosis in a cell.

22. The method of claim 14, wherein the compound is a carbocyanine.

23. The method of claim 22, wherein the carbocyanine is 3,3'-diethyloxadicarbocyanine (DODC).

24. A method for identifying a candidate compound that inhibits telomerase activity, comprising the steps:

a) obtaining the three-dimensional structure of a selected compound; and

b) determining the complementarity of the compound to telomere DNA G-quadruplex

wherein a compound that exhibits at least 75% of the favourable intermolecular interaction energy of the perylene diimide **2**-d(TTAGGG)$_4$ complex structure is indicated to inhibit telomerase activity.

25. A method of identifying a telomerase inhibitor comprising:

a) contacting a compound with DNA G-quadruplex; and

b) determining the melting point of the DNA G-quadruplex

wherein a compound exhibiting an increase in melting point of said quadruplex, relative to unbound DNA G-quadruplex, is indicated to inhibit telomerase activity.

26. A method of identifying a telomerase inhibitor comprising the steps:

a) preparing a DNA G-quadruplex/dye complex wherein the dye is bound with the G-quadruplex;

b) contacting said complex with a candidate compound; and

c) determining displacement of said dye in the complex by said candidate, wherein displacement of the dye identifies the candidate as a telomerase inhibitor.

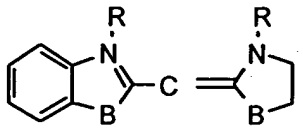
27. A method of identifying a telomerase inhibitor comprising:

a) contacting a candidate compound to be identified as a telomerase inhibitor with DNA G-quadruplex; and

b) determining the fluorescence or UV/VIS spectrum of the compound

wherein an increase or decrease of the UV/VIS absorption or fluorescence emission intensity of said compound relative to the UV/VIS absorption or fluorescence emission intensity in the absence of DNA-G-quadruplex indicates telomerase inhibitory activity of the compound.

28. A compound of the formula:



II

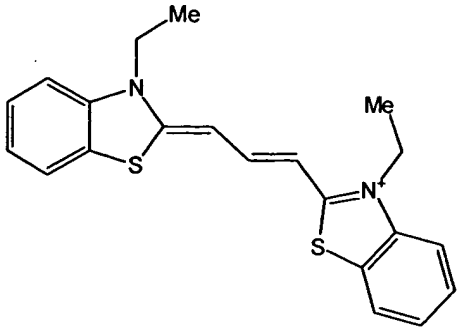
in which C is -CH=CH-, $-(CH=CH)_2-$, $-(CH=CH)_3-$, p-phenylene, o-phenylene, p-phenylene-CH=CH-, or o-phenylene-CH=CH-; B is O, S, or NR, and R is Me or Et.

Additional Claims:

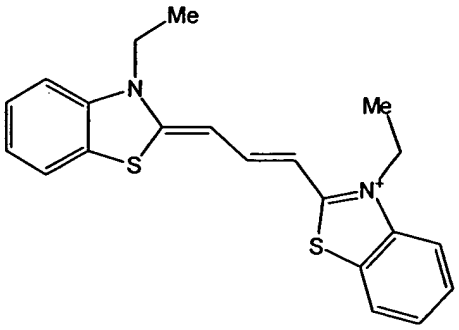
29. The method of claim 1, wherein the mitotic division of a cell is inhibited.

30. The method of claim 14, wherein the mitotic division of a cell is inhibited.

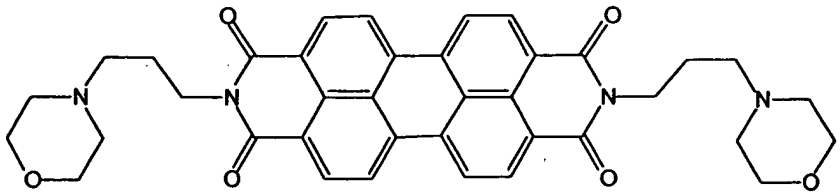
31. A compound of claim 28, having the structure:



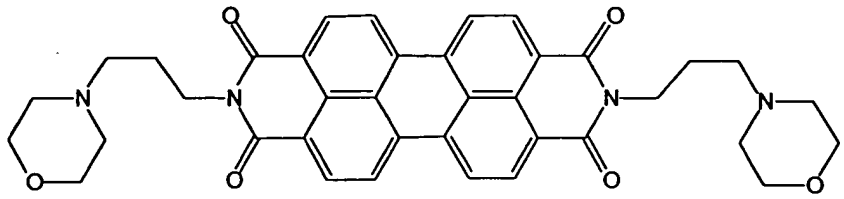
32. The method of claim 14, having the structure:



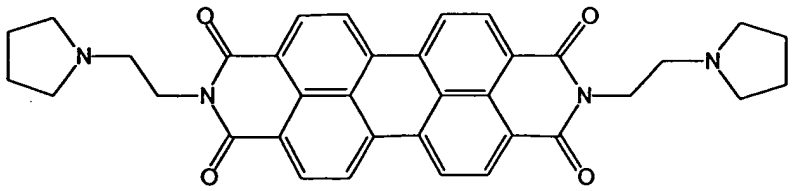
33. A compound of claim 13, having the formula:



34. The method of claim 1, having the formula:



35. The compound of claim 13, having the formula:



36. The method of claim 1, having the structure: